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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,324	10/16/2003	Robert Urscheler	62733C	7328

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THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
P. O. BOX 1967
MIDLAND, MI 48641-1967

EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/687,324	Applicant(s) URSCHELER ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31, 34, 35 and 37-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claim 36 is canceled

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>attached</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/05, 7/05</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

The amendment and declaration of July 25, 2005 have been received and entered.

It is noted that claim 36 is canceled.

Priority

1. Priority in the present application as to the use of EP 1249533 only extends back to 10/17/02, the filing date of 10/273,922. A review of 10/257,172 indicates that it does not teach all the features in the independent claims of the present application, and thus, priority fails.

Specification

2. The objection to the disclosure as the "Brief Description of the Drawing" at pages 10-11 of the specification is withdrawn due to applicant's amendments to page 10 of the specification on July 25, 2005.

Claim Rejections - 35 USC § 112

3. The objection to claims 3-6 and 39 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to applicant's amendments to these claims on July 25, 2005.

Response to Amendment

4. The declaration filed on July 25, 2005 under 37 CFR 1.131 has been considered but is ineffective to overcome the EP 1 249 533 (hereinafter '533) reference.

The evidence submitted is insufficient to establish a reduction to practice of the invention in this country or a NAFTA or WTO member country prior to the effective date of the '533 reference.

Specifically, in the declaration applicant has not (1) indicated that the reduction to practice occurred in this country, a NAFTA member country, or a WTO member country. (2) Secondly, applicant refers to WO 2004/035929 A1, which published in April 29, 2004, as showing reduction to practice because the WO application was filed on October 15, 2002, prior to the '533 publication. However, the WO publication shows what the application was like at the time of the April 29, 2004 publication. Since WO applications can be amended, this is not necessarily what the application looked like at the time of filing, and applicant does not indicate in the declaration that this WO document as published is identical to what was filed on October 15, 2002.

As a result, the '533 remains a valid reference for the 35 USC 103 rejections provided below.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5, 8-31, 34, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1 249 533 A1 (hereinafter '533) in view of Wittosch et al (US 6458120).

Claims 1, 35, 41: '533 teaches a method of producing a coated substrate.

Paragraph [0014]. The steps include forming a composite, multilayer free flowing curtain. Paragraph [0014]. The curtain comprises at least two layers. Paragraph [0014].

At least one or more layer can provide barrier properties. Paragraph [0033]. One layer can be provided with a material that provides water resistance functionality. Paragraph [0035], [0053] and [0071] – [0075]. The Cobb value when applied can be 10 g/m².

Paragraph [0075] and Table 6. '533 also indicates that it is known to be desirable to provide functional coatings to provide grease proof papers and moisture resistant

papers as well. Paragraph [0009]. The curtain is contacted with a continuous moving web. Figure 1 and paragraph [0039].

Claim 2: a top layer can be provided. Paragraphs [0020], [0023]. This layer can provide gloss that provides printability. Paragraphs [0020]-[0021].

Claim 5: the Cobb value can be 10 g/m². Paragraph [0075] and Table 6.

Claim 8: the coating can be applied with a lubricant. Paragraph [0026].

Claims 9-11, 41: the coatweight of the layers can be 0.5 g/m², for example.

Paragraph [0034].

Claims 12-13: the coatweight of the layers can be 0.5 g/m², and thus the total coat weight can be less than 30 g/m².

Claims 14-17: 2 or more layers can be applied. Paragraph [0033].

Claim 18: at least one layer can contain a pigment. Paragraph [0020], [0022].

Claim 19: the pigment can be clay, kaolin, talc, etc. Paragraph [0022].

Claim 20: the barrier layer can include polyvinyl alcohol. Paragraph [0035].

Claim 22: the layers can include a surfactant. Paragraph [0026].

Claims 23-25, 41: the solid contents can be up to 75 wt%. Paragraph [0034].

Claim 26: the web can be base paper. Paragraph [0031].

Claims 28-30, 41: web speed can be 600 to 3200 m/min. Paragraph [0036].

Claim 34: additional adhesive layer can be applied. Paragraph [0033].

Claim 37: the curtain can be formed with a slide die. Figure 1 and paragraph [0029].

'533 teaches all the features of these claims except for (1) the combination of different layer materials, (2) the Cobb value timing, (3) the oil/grease features (claims 1, 3), (4) the water vapor transmission (claims 1, 4), (5) fold crack resistance (claim 8), (6) the number of layers (claims 14-17), (7) the components of claim 21, (8) the paper features (claim 27), (9) the web weight (claim 31).

However, Wittosch teaches layer materials desired to be applied as part of a multilayer coating to paper webs. The basis weight of the substrate paper can be 20 to 150 lbs/ft² (30-244 g/m²). Column 6, lines 40-50. The substrate can be uncoated paper and paperboard. Column 6, lines 40-45. Wittosch teaches that it is desired to provide grease resistant layers. Column 7, lines 30-35 and column 10, line 15 through column 11, line 35. The grease Kit value can be 11-12. column 11, lines 15-25 and column 7, lines 60-68. It is also desirable to provide water vapor barrier functionality and water resistance functionality. Column 7, lines 30-60. The water vapor transmission rate can be less than 2.38 g/100 sq.inches in a day (about 37 g/m²). Column 9, lines 10-20. The Cobb test for water resistance can be 0.99-.58 g/100 sq.inches in 30 min (about 15-9 g/m²). Column 11, lines 15-25. The layers can include polyvinyl chloride. Column 5, lines 20-30.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '533 to further include functional layers that provide grease and/or water vapor barrier functionality and other paper features as described by Wittosch in order to provide a desirable final paper for commercial use, because '533

teaches to include one or more layers that have functional barrier properties, including moisture resistance, and also that grease resistance is desired when coating paper, and Wittosch teaches that it is desirable to provide layers that provide grease resistance and water vapor functionality when providing commercial paper. It would have been obvious to provide the different functional features in separate layers, given '533's teaching that multiple functional layers can be provided. As to the specific water vapor transmission amounts, the Cobb values, and the Kit values, '533 and Wittosch teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize the specific values of these desirable features. As to the fold crack resistance, it would have been obvious to provide such a feature, given the teaching of '533 to provide a lubricant in the coating, which would indicate the desire to have a flexible coating. As to the number of layers, it would have been obvious to optimize the number of layers based on the functional features desired, given the teaching of '533 to provide 2 or more layers and the number of functional layer features that are taught to be possibly provided. As to the components of claim 21, Wittosch teaches that polyvinyl chloride, for example, is a desirable ingredient in the coating layers. As to the use of non-precoated papers, Wittosch teaches the desire to coat and protect such papers. As to the web weight, Wittosch teaches the desire to coat and protect papers of such weight.

8. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over '533 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of the abstract of DD 221722 (hereinafter '722).

'533 in view of Wittosch teaches all the features of this claim except use of synthetic magadiite as a pigment.

However, '722 teaches a desirable method of synthesizing magadiite, thus forming synthetic magadiite. Abstract. The produced material can be used as pigment. Abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '533 in view of Wittosch to use a pigment of synthetic magadiite as described by '722 in order to provide a desirable final paper for commercial use, because '533 in view of Wittosch teaches to include one or more layers that have functional barrier properties and to use a pigmented coating, and '722 teaches that a known pigment that can be synthesized is magadiite.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over '533 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of WO 01/54828 A1 (hereinafter '828).

'533 in view of Wittosch teaches all the features of this claim except the provision of a layer with oxygen barrier functionality with the claimed transmission rate.

However, '828 teaches that when curtain coating multilayer curtains onto a moving paper web, a desirable functionality is to provide a layer with oxygen barrier functionality. See pages 1-4. The oxygen barrier functionality is such that oxygen transmission is desirably no more than $150 \text{ cm}^3/\text{m}^2$, per 24 h (23 degrees C, 83% relative humidity) at one atm and most preferably no more than $1 \text{ cm}^3/\text{m}^2$. Pages 6-7.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '533 in view of Wittosch to further include functional layers that provide oxygen barrier functionality as described by '828 in order to provide a desirable final paper for commercial use, because '533 in view of Wittosch teaches to include one or more layers that have functional barrier properties, and '828 teaches that it is desirable to provide layers that provide oxygen barrier functionality when providing commercial paper. It would have been obvious to provide the different functional features in separate layers, given '533's teaching that multiple functional layers can be provided. As to the specific oxygen transmission amounts, '828 teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize the specific values of these desirable features.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over '533 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of Hughes (US 3508947)

'533 in view of Wittosch teaches all the features of this claim except formation of a curtain with a slot die.

However, Hughes teaches that when curtain coating, it is well known to use a slide die (figure 1) or a slot type die (figure 8) to provide the free falling curtain.

Column 8, lines 10-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '533 in view of Wittosch to use a slot die as described by Hughes in order to provide a desirable final paper for commercial use, because '533 in view of Wittosch teaches to use a slide curtain coating die system, and Hughes teaches that it is desirable to curtain coat with either a slot or slide die system.

11. Claims 38, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over '533 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of Dittman et al (US 4001024).

'533 in view of Wittosch teaches all the features of these claims except the provision of polyethylene oxide in a layer. '533 does teach the use of a surfactant in the coating layers. See paragraph [0026].

However, Dittman teaches that a well known surfactant to use when forming multilayer coating layers on slide die systems is polyethylene oxide. See column 7, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '533 in view of Wittosch to further use a surfactant such as polyethylene oxide as described by Dittman in order to provide a desirable final paper for commercial use, because '533 in view of Wittosch teaches to include a surfactant in the layers, and Dittman teaches that a well known surfactant for multilayer coatings on slide dies is polyethylene oxide. As to the interface layer, '533 indicates that surfactants can be in the various layers.

12. Claims 1-5, 8-31, 34, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/084029A1 (hereinafter '029) in view of Wittosch et al (US 6458120).

The applied reference has a common inventor (Robert Urscheler) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in

the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

***** Please note that the effective date of '029 extends back to the filing date of April 12, 2004², as '029 designates the United States and was published in English. *****

Claims 1, 35, 41: '029 teaches a method of producing a coated substrate. Page 5. The steps include forming a composite, multilayer free flowing curtain. Page 5. The curtain comprises at least two layers. Page 5. At least one or more layer can provide barrier properties. Page 9. One layer can be provided with a material that provides water resistance functionality. Pages 9, 20 and 34-36. The Cobb value when applied can be 10 g/m². Page 36 and Table 7. '029 also indicates that it is known to be desirable to provide functional coatings to provide grease proof papers and moisture resistant papers as well. Page 4. The curtain is contacted with a continuous moving web. Figure 1 and page 14.

Claim 2: a top layer can be provided. Page 6. This layer can provide gloss that provides printability. Pages 6-7.

Claim 5: the Cobb value can be 10 g/m². Page 36, Table 7.

Claim 8: the coating have fold crack resistance. Page 9.

Claims 9-11, 41: the coatweight of the layers can be 0.5 g/m², for example. Page 9.

Claims 12-13: the coatweight of the layers can be 0.5 g/m², and thus the total coat weight can be less than 30 g/m². Page 9.

Claims 14-17: 2 or more layers can be applied. Page 7.

Claim 18: at least one layer can contain a pigment. Page 7.

Claim 19: the pigment can be clay, kaolin, talc, etc. Page 7.

Claim 20: the barrier layer can include polyvinyl alcohol. Page 9.

Claim 22: the layers can include a surfactant. Pages 9-10.

Claims 23-25, 41: the solid contents can be up to 75 wt%. Page 9.

Claim 26: the web can be base paper. Page 12.

Claims 28-30, 41: web speed can be 600 to 3200 m/min. Page 13.

Claim 34: additional adhesive layer can be applied. Pa 9.

Claim 37: the curtain can be formed with a slide die. Figure 1 and page 14.

'029 teaches all the features of these claims except for (1) the combination of different layer materials, (2) the Cobb value timing, (3) the oil/grease features (claims 1, 3), (4) the water vapor transmission (claims 1, 4), (5) the number of layers (claims 14-17), (6) the components of claim 21, (7) the paper features (claim 27), (8) the web weight (claim 31).

However, Wittosch teaches layer materials desired to be applied as part of a multilayer coating to paper webs. The basis weight of the substrate paper can be 20 to 150 lbs/ft² (30-244 g/m²). Column 6, lines 40-50. The substrate can be uncoated paper and paperboard. Column 6, lines 40-45. Wittosch teaches that it is desired to provide

grease resistant layers. Column 7, lines 30-35 and column 10, line 15 through column 11, line 35. The grease Kit value can be 11-12. column 11, lines 15-25 and column 7, lines 60-68. It is also desirable to provide water vapor barrier functionality and water resistance functionality. Column 7, lines 30-60. The water vapor transmission rate can be less than 2.38 g/100 sq.inches in a day (about 37 g/m²). Column 9, lines 10-20. The Cobb test for water resistance can be 0.99-.58 g/100 sq.inches in 30 min (about 15-9 g/m²). Column 11, lines 15-25. The layers can include polyvinyl chloride. Column 5, lines 20-30.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '029 to further include functional layers that provide grease and/or water vapor barrier functionality and other paper features as described by Wittosch in order to provide a desirable final paper for commercial use, because '029 teaches to include one or more layers that have functional barrier properties, including moisture resistance, and also that grease resistance is desired when coating paper, and Wittosch teaches that it is desirable to provide layers that provide grease resistance and water vapor functionality when providing commercial paper. It would have been obvious to provide the different functional features in separate layers, given '029's teaching that multiple functional layers can be provided. As to the specific water vapor transmission amounts, the Cobb values, and the Kit values, '029 and Wittosch teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize the specific

values of these desirable features. As to the number of layers, it would have been obvious to optimize the number of layers based on the functional features desired, given the teaching of '029 to provide 2 or more layers and the number of functional layer features that are taught to be possibly provided. As to the components of claim 21, Wittosch teaches that polyvinyl chloride, for example, is a desirable ingredient in the coating layers. As to the use of non-precoated papers, Wittosch teaches the desire to coat and protect such papers. As to the web weight, Wittosch teaches the desire to coat and protect papers of such weight.

13. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over '029 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of the abstract of DD 221722 (hereinafter '722).

**** please note the issue as to common inventorship as discussed in paragraph 12 above ****

'029 in view of Wittosch teaches all the features of this claim except use of synthetic magadiite as a pigment.

However, '722 teaches a desirable method of synthesizing magadiite, thus forming synthetic magadiite. Abstract. The produced material can be used as pigment. Abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '029 in view of Wittosch to use a pigment of synthetic

magadiite as described by '722 in order to provide a desirable final paper for commercial use, because '029 in view of Wittosch teaches to include one or more layers that have functional barrier properties and to use a pigmented coating, and '722 teaches that a known pigment that can be synthesized is magadiite.

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over '029 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of WO 01/54828 A1 (hereinafter '828).

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'029 in view of Wittosch teaches all the features of this claim except the provision of a layer with oxygen barrier functionality with the claimed transmission rate.

However, '828 teaches that when curtain coating multilayer curtains onto a moving paper web, a desirable functionality is to provide a layer with oxygen barrier functionality. See pages 1-4. The oxygen barrier functionality is such that oxygen transmission is desirably no more than 150 cm³/m², per 24 h (23 degrees C, 83% relative humidity) at one atm and most preferably no more than 1 cm³/m². Pages 6-7.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '029 in view of Wittosch to further include functional layers that provide oxygen barrier functionality as described by '828 in order to provide

a desirable final paper for commercial use, because '029 in view of Wittosch teaches to include one or more layers that have functional barrier properties, and '828 teaches that it is desirable to provide layers that provide oxygen barrier functionality when providing commercial paper. It would have been obvious to provide the different functional features in separate layers, given '029 teaching that multiple functional layers can be provided. As to the specific oxygen transmission amounts, '828 teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize the specific values of these desirable features.

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over '029 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of Hughes (US 3508947)

**** please note the issue as to common inventorship as discussed in paragraph 12 above ****

'029 in view of Wittosch teaches all the features of this claim except formation of a curtain with a slot die.

However, Hughes teaches that when curtain coating, it is well known to use a slide die (figure 1) or a slot type die (figure 8) to provide the free falling curtain.

Column 8, lines 10-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '029 in view of Wittosch to use a slot die as described by Hughes in order to provide a desirable final paper for commercial use, because '029 in view of Wittosch teaches to use a slide curtain coating die system, and Hughes teaches that it is desirable to curtain coat with either a slot or slide die system.

16. Claims 38, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over '029 in view of Wittosch as applied to claims 1-5, 8-31, 34, 35 and 37 above, and further in view of Dittman et al (US 4001024).

**** please note the issue as to common inventorship as discussed in paragraph 12 above ****

'029 in view of Wittosch teaches all the features of these claims except the provision of polyethylene oxide in a layer. '029 does teach the use of a surfactant in the coating layers. See pages 9-10.

However, Dittman teaches that a well known surfactant to use when forming multilayer coating layers on slide die systems is polyethylene oxide. See column 7, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '029 in view of Wittosch to further use a surfactant such as polyethylene oxide as described by Dittman in order to provide a desirable final paper for commercial use, because '029 in view of Wittosch teaches to include a

surfactant in the layers, and Dittman teaches that a well known surfactant for multilayer coatings on slide dies is polyethylene oxide. As to the interface layer, '029 indicates that surfactants can be in the various layers.

17. Claims 1-6, 8-31, 34, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/54828 (hereinafter '828) in view of Wittosch et al (US 6458120).

Claims 1, 35, 41: '828 teaches a method of producing a coated substrate. Figure 2 and page 8. The steps include forming a composite, multilayer free flowing curtain. Figure 2 and page 8. The curtain comprises at least two layers. Page 2. At least one or more layer can provide barrier properties. Page 2. One layer can be provided with a material that provides water resistance functionality. Page 2. A layer can also provide oxygen barrier functionality. Page 2. The curtain is contacted with a continuous moving web. Figure 2 and page 8.

Claim 2: the method can be used to make packages such as food and drink packages. Page 7.

Claim 6: the oxygen transmission can be no more than $150 \text{ cm}^3/\text{m}^2$, per 24 h (23 degrees C, 83% relative humidity) at one atm, and most preferably no more than $1 \text{ cm}^3/\text{m}^2$. pages 6-7.

Claim 8: it is desired to prevent cracks. Pages 4-5.

Claims 14-17: 5-8 layers can be applied. Page 8.

Claim 20: the barrier layer can include polyvinyl alcohol. Page 2.

Claim 22: the layers can include a surfactant. Page 4.

Claim 26: the web can be base paper. Page 4.

Claim 34: additional adhesive layer can be applied. Page 2.

Claim 37: the curtain can be formed with a slide die. Figure 2 and page 8.

'828 teaches all the features of these claims except for (1) the combination of different layer materials, (2) the Cobb value features (claims 1, 5), (3) the oil/grease features (claims 1, 3), (4) the water vapor transmission (claims 1, 4), (5) the oxygen barrier features (claims 1, 6), (6) the coat weight (claims 9-13), (7) the pigments and printability (claims 2, 18-19), (8) the components of claim 21, (9) the solid contents (claims 23-25), (10) the paper features (claim 27), (11) the web speed (claims 28-30), (12) the web weight (claim 31).

However, Wittosch teaches layer materials desired to be applied as part of a multilayer coating to paper webs. The basis weight of the substrate paper can be 20 to 150 lbs/ft² (30-244 g/m²). Column 6, lines 40-50. The substrate can be uncoated paper and paperboard. Column 6, lines 40-45. Wittosch teaches that it is desired to provide grease resistant layers. Column 7, lines 30-35 and column 10, line 15 through column 11, line 35. The grease Kit value can be 11-12. column 11, lines 15-25 and column 7, lines 60-68. It is also desirable to provide water vapor barrier functionality and water resistance functionality. Column 7, lines 30-60. The water vapor transmission rate can be less than 2.38 g/100 sq.inches in a day (about 37 g/m²). Column 9, lines 10-20. The

Cobb test for water resistance can be 0.99-.58 g/100 sq.inches in 30 min (about 15-9 g/m²). Column 11, lines 15-25. The layers can include polyvinyl chloride. Column 5, lines 20-30.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 to further include functional layers that provide grease and/or water vapor barrier functionality and other paper features as described by Wittosch in order to provide a desirable final paper for commercial use, because '828 teaches to include one or more layers that have functional barrier properties, including moisture resistance and oxygen barrier functionality and Wittosch teaches that it is desirable to provide layers that provide grease resistance and water vapor functionality when providing commercial paper. It would further have been obvious to provide the different functional features in separate layers, given '828's teaching that multiple functional layers can be provided. As to the specific water vapor transmission amounts, oxygen transmission, the Cobb values, and the Kit values, '828 and Wittosch teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize the specific values of these desirable features. As to the use of pigments and a printable^{layer,} it is the Examiner's position that it would have been obvious to use well known pigments in the layers and to make printable, given that '828 teaches, for example, that food and drink packages can be made, which packages are well known to be printed and provided with color for consumer use. As to the coatweight and solid contents, it

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✓B would have been obvious ^{to perform routine experimentation to optimize} these features based on the functional features desired, given the teaching of '828 to provide multiple extremely thin layers and the number of functional layer features that are taught to be possibly provided. As to the components of claim 21, Wittosch teaches that polyvinyl chloride, for example, is a desirable ingredient in the coating layers. As to the use of non-precoated papers, Wittosch teaches the desire to coat and protect such papers. As to the web weight, Wittosch teaches the desire to coat and protect papers of such weight.

18. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch as applied to claims 1-6, 8-31, 34, 35 and 37 above, and further in view of the abstract of DD 221722 (hereinafter '722).

'828 in view of Wittosch teaches all the features of this claim except use of synthetic magadiite as a pigment.

However, '722 teaches a desirable method of synthesizing magadiite, thus forming synthetic magadiite. Abstract. The produced material can be used as pigment. Abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch to use a pigment of synthetic magadiite as described by '722 in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch teaches to include one or more layers

that have functional barrier properties and to use a pigmented coating, and '722 teaches that a known pigment that can be synthesized is magadiite.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch as applied to claims 1-6, 8-31, 34, 35 and 37 above, and further in view of Hughes (US 3508947)

'828 in view of Wittosch teaches all the features of this claim except formation of a curtain with a slot die.

However, Hughes teaches that when curtain coating, it is well known to use a slide die (figure 1) or a slot type die (figure 8) to provide the free falling curtain. Column 8, lines 10-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch to use a slot die as described by Hughes in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch teaches to use a slide curtain coating die system, and Hughes teaches that it is desirable to curtain coat with either a slot or slide die system.

20. Claims 38, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch as applied to claims 1-6, 8-31, 34, 35 and 37 above, and further in view of Dittman et al (US 4001024).

'828 in view of Wittosch teaches all the features of these claims except the provision of polyethylene oxide in a layer. '828 does teach the use of a surfactant in the coating layers. See page 8.

However, Dittman teaches that a well known surfactant to use when forming multilayer coating layers on slide die systems is polyethylene oxide. See column 7, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch to further use a surfactant such as polyethylene oxide as described by Dittman in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch teaches to include a surfactant in the layers, and Dittman teaches that a well known surfactant for multilayer coatings on slide dies is polyethylene oxide. As to the interface layer, '828 indicates that surfactants can be in the various layers.

21. The Examiner notes that WO 02/084029 was provided by applicant in the IDS statement of July 25, 2005.

Response to Arguments

22. Applicant's arguments filed July 25, 2005 have been fully considered but they are not persuasive.

As to the rejections using EP 1 249 533, applicant argues that this is not available as a reference as shown by the 1.131 declaration. However, as discussed in the Response to Amendment section above, this declaration does overcome the reference. Therefore, the rejections using EP 1 249 533 remain.

Applicant further indicated at page 9 that they do not believe that synthetic magadiite was a known pigment for paper coating processes. As a result, the Examiner has provided the abstract to DD 221722 as to this issue.

The Examiner has further provided new rejections using WO 02/084029 and WO 01/54828 as the primary references as discussed above.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER